GGN KHALSA COLLEGE, LUDHIANA
Certificate Course in Computer Hardware and Maintenance

Section A

Electronic Components – resistor, capacitor, inductor, transformer, diode, transistors: their function, types, identification, etc.
Testing Instruments, Integrated Circuits, PCB, Analog & Digital Signals, Numbering Systems (binary & hexadecimal), ASCII Codes, BCD. Functional description of gates, Flip-flop (RS.T, D, JK), Registers, Multiplexers / Demultiplexers, Encoder/Decoder, ADC/DAC, Counter, Adder, Subtractor, Parity Generator/Checker, Basics of Semiconductor memories (Different types of RAM / ROM), Timing Circuits, Electronic Display (7 segment, LED, LCD, Plasma, LED matrix)

Section B

Mother Board & Components
Types, Form factor, Different Components of Mother Boards (I/O slots, I/O connectors, CMOS battery, RTC, Memory Socket, BIOS, Front Panel Connectors), Types of Buses, compatibility with the processor, SATA interface
System Resources
IRQ, DMA, Memory Address, I/O address, Resource Conflict, Plug & Play Concept

CMOS Utility
Concept, CMOS RAM, CMOS Battery, backup, CMOS Utility, Program menu, clearing CMOS

Section C

Add on Cards, Cables & Connectors
Different latest Add on Cards – (Identification in terms of I/O slot and connectors) (AGP, PCI Express, TV Tuner Card, DVR card, Video Capture, SCSI. USB, NIC, Fire wire, Internal Modem, Sound Card)
Display Systems
Types of VDU, (CRT, LCD, TFT), Terms like Resolution, Dot Pitch, Interlaced & Non Interlaced Power Consumption, Durability, Specification, Installation

Section D

Drives
Floppy Disk Drive: Floppy Drive, Components (Read / Write Head, Spindle Motor, Head Actuator, Sensors, Connectors), and Preventive Maintenance, Trouble Shooting Hard Disk Drive: Types, capacity, Hard Disk Drive Component (Media,

R/W Head, Spindle Motor Head Actuator) Connectors, Jumper setting, and HDD Specification (Head, Cylinder, Sector, Model Number, Firmware Number), configuration of HDD in, CMOS, BIOS setup, partitioning, Formatting, Writing Format, File Format (FAT, NTFS, Ext.3 for LINUX), type of interface, Preventive Maintenance (S/W, H/W), trouble Shooting (H/W, S/W Recovery, Zero fill)

Optical Disk Drive: Types (ROM, R/W, DVDROM, DVD R/W), Capacity, Drive Components (Connectors, Motors, Sensors, Lense, Jumper Setting) CD ROM Drive / Disc. Format (ISO9660, high Sierra), Difference between CD & DVD (Capacity, format), Interface (IDE, SCSI, USB)

Backup Drive: Pen Drive U3 format, Zip Drive, Tape Drive, USB External Drive (HDD, CD/DVD writer), Types, capacity, interface connector, write protection, Trouble Shooting, Introduction of Magneto-Optical Drive, Interface, Installation, casing for external drive